



Attorney Docket No. JP919990123US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): E. Colgan et al.
Docket No.: JP919990123US1
Serial No.: 09/662,192
Filing Date: September 14, 2000
Group: 2871
Examiner: Prasad R. Akkapeddi

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450.

Signature: *Lisa L. Vulpis* Date: September 12, 2003

Title: Liquid Crystal Light Valve and Method for Producing Same, and Liquid Crystal Projection Display Device

RESPONSE TO FINAL OFFICE ACTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the final Office Action dated June 12, 2003, Applicants submit herewith the following remarks for consideration in the above-identified application.

REMARKS

The present application was filed on September 14, 2000 with claims 1-38. In the outstanding Office Action dated October 23, 2002, the Examiner has: (i) rejected claims 1-3, 5, 6, 12-14, 16, 17, 23-25, 27, 28 and 34-36 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,081,305 to Sato et al. (hereinafter "Sato"); (ii) rejected claims 4, 9-11, 15, 20-22, 26 and 31-33 under 35 U.S.C. §103(a) as being unpatentable over Sato, in view of U.S. Patent No. 5,056,895 to Kahn (hereinafter "Kahn"); and (iii) indicated that claims 37 and 38 are allowed and that claims 7, 8, 18, 19, 29 and 30 are allowable.

In this response, Applicants traverse the §102(e) and §103(a) rejections. Applicants respectfully request reconsideration of the present application in view of the following remarks.

Claims 1-3, 5, 6, 12-14, 16, 17, 23-25, 27, 28 and 34-37 stand rejected under §102(e) as being anticipated by the Sato reference. Specifically, with regard to independent claims 1, 12, 23 and 34-36, the Examiner contends that Sato, with reference to FIG. 2, discloses a liquid crystal light valve comprising “a light-blocking layer (163) formed below the light-reflecting films (140, 160 and 180)” and “light shields (164) provided on the light-blocking layer formed below the light-reflecting films (180)” (present Office Action; page 3, last paragraph to page 4, first paragraph). Applicants respectfully disagree with the Examiner’s contentions.

With regard to independent claims 1, 12, 23 and 34-36, Applicants submit that Sato fails to teach or suggest at least “light shields provided on the light-blocking layer,” as required by the subject claims. The Examiner analogizes the light-blocking layer and light shields to the shading layer 163 and middle electrode 164, respectively, shown in FIG. 2 of Sato. However, Applicants disagree with this characterization of the prior art and submit that the shading layer 163 and middle electrode 164 in Sato are functionally non-analogous to the light-blocking layer (20) and light shields (38), respectively, of the present invention. For example, Sato discloses that the shading layer 163 is formed as patterns on the second metal layer 160 that “reflect or absorb incident light, thereby shading light reaching the semiconductor elements” (Sato; column 13, lines 53-54, 59-62; emphasis added). In contrast, the light-blocking layer of the claimed invention is clearly defined such that it “prevents a reflection of light transmitted to the light-blocking layer 20” (present specification; page 12, lines 21-22; emphasis added). Thus, Sato in fact teaches away from the claimed invention.

Even assuming, *arguendo*, that the shading layer taught by Sato can be analogized to the light-blocking layer recited in the subject claims, Applicants assert that Sato still fails to disclose light shields formed on the light-blocking layer, as required by the claimed invention. Rather, Sato clearly discloses that the middle electrode 164 and shading layer 163 are both formed within the same layer, namely, second metal layer 160 (Sato; column 14, lines 58-59; FIG. 2), and thus one structure cannot be formed on top of the other.

Sato further fails to disclose at least two insulating layers formed between the light-reflecting films (24) and the light-blocking layer (20) as set forth in the subject claims (present specification; FIG. 1). In this regard, the Examiner contends that ‘the formation of at least two insulating layers between any pair of such light-reflecting films and light-blocking layer’, is NOT recited in the instant

claims 1, 12 or 23” (final Office Action; page 7, last paragraph). Applicants respectfully disagree with this contention.

Specifically, claim 1, for example, recites “a second insulating layer formed between the light-reflecting films and the light-blocking layer” and “a third insulating layer formed between the light shields and the light-reflecting films.” Clearly, the second insulating layer is required to be formed between the light-reflecting films and the light-blocking layer. Additionally, since claim 1 requires that the light shields are “provided on the light-blocking layer formed below the light-reflecting films” (emphasis added), it must follow that the third insulating layer is also formed between the light-reflecting films and the light-blocking layer. Thus, the claimed invention does require at least two insulating layers, namely, second insulating layer (22) and third insulating layer (50), formed between the light-reflecting films (24) and the light-blocking layer (20). This is also clearly evident from FIG. 1. As previously stated, Sato clearly fails to disclose this arrangement.

With regard to Sato, the Examiner analogizes the light-reflecting films recited in the subject claims to the first, second and third metal layers 140, 160 and 180, respectively, in Sato. Assuming, *arguendo*, that this analogy is even reasonably valid, the claimed invention specifically requires that the light shields 38 be formed below the light-reflecting films 24 (plural), implying that the light shields are formed below all of the light-reflecting films, since a single light-reflecting film is not specified by the claim. The Examiner, however, analogizes the middle electrode 164 in Sato to the light shields of the present invention. But the middle electrode 164 is formed below only one of the metal layers, namely, third metal layer 180. Thus, the disclosure of Sato cannot reasonably support the specific arrangement of the liquid crystal light valve recited in the subject claims.

Inasmuch as the Sato reference fails to teach or suggest the present invention as claimed, Applicants submit that independent claims 1, 12, 23 and 34-36 are patentable over the prior art. Accordingly, favorable reconsideration and allowance of these claims are respectfully solicited.

With regard to claims 2, 3, 5 and 6, which depend from claim 1, claims 13, 14, 16 and 17, which depend from claim 12, and claims 24, 25, 27 and 28, which depend from claim 23, Applicants assert that these claims are also patentable over the prior art of record by virtue of their dependency from their respective independent claims, which are believed to be patentable for at least the reasons set forth above. Furthermore, one or more of these claims define additional patentable subject matter

in their own right. For example, claims 2, 13 and 24, which are of similar scope, further define the light-blocking layer as being formed just below the light shields. This arrangement is not disclosed in Sato. Instead, Sato discloses that the middle electrode, which the Examiner analogizes to the light shields, and the shading layer, which the Examiner analogizes to the light-blocking layer, are formed in the same layer, namely, second metal layer 160 (Sato; column 14, lines 58-59). Likewise, claims 6, 17 and 28, which are of similar scope, further define the light-blocking layer as being "formed by laminating at least one metal selected from the group consisting of Al, Cr-Cr_xO_y, Ti, TiN, and TiN_xC_y." Sato fails to teach or remotely suggest that the shading layer 163, which the Examiner analogizes to the light-blocking layer of the claimed invention, is formed as a laminated structure. Accordingly, Applicants assert that claims 2, 3, 5, 6, 13, 14, 16, 17, 24, 25, 27 and 28 are patentable over the prior art of record, not merely by virtue of their dependency from their respective independent claims, but also in their own right. Therefore, favorable reconsideration and allowance of claims 2, 3, 5, 6, 13, 14, 16, 17, 24, 25, 27 and 28 are respectfully requested.

Claims 4, 9-11, 15, 20-22, 26 and 31-33 stand rejected under §103(a) as being unpatentable over Sato, in view of Kahn. Specifically, the Examiner acknowledges that Sato fails to disclose the materials used to form the insulating layers and/or that the electric circuit formed in the substrate does not include a storage capacitance, as set forth in one or more of the subject claims. However, the Examiner contends that such limitations are disclosed in Kahn.

While disagreeing with the Examiner's characterization of the Kahn reference as applied to the subject claims, Applicants submit that claims 4 and 9-11, which depend from claim 1, claims 15 and 20-22, which depend from claim 12, and claims 26 and 31-33, which depend from claim 23, are patentable over the prior art of record by virtue of their dependency from their respective independent claims, which are believed to be patentable for at least the reasons given above. Moreover, these claims define additional patentable subject matter in their own right. Accordingly, favorable reconsideration and allowance of claims 4, 9-11, 15, 20-22, 26 and 31-33 are respectfully solicited.

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In view of the foregoing, Applicants believe that pending claims 1-38 are in condition for allowance, and respectfully request withdrawal of the §102 and §103 rejections.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Wayne L. Ellenbogen", with a long, sweeping horizontal line extending to the right.

Date: September 12, 2003

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